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ABSTRACT

Conventional wisdom has suggested that the rate at which a reader processes text matters little as long as the reader can read with accuracy and comprehension. This paper makes the case that reading rate is an essential component of proficient reading, and is significantly correlated with other measures of proficient reading, such as standardized and informal measures of comprehension and word recognition accuracy. If, however, reading rate is to be used as a method for assessing reading progress and problems, certain tasks must be carried out. These include the identification of valid standards for reading rate as well as the conditions under which reading rate should be measured. In theory, reading rate is a measure of the underlying concept of reading fluency. Authentic interventions such as the use of repeated readings prior to the performance of poetry or reader's theater have been shown to lead to improved fluency, improved rate of reading, and improved overall performance in reading. (Contains 4 tables and 11 references.) (SLD)

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Revisiting Reading Rate as a Diagnostic Tool for Reading Difficulties

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Abstract

For years reading rate has occupied a secondary role, at best, in most practitioners' concept of reading and reading assessment and diagnosis. Conventional wisdom has suggested that the rate at which a reader processes text matters little as long as the reader read with accuracy and, more importantly, with comprehension. In this paper I argue that reading rate is a essential component of proficient reading and is significantly correlated with other measures of proficient reading such as standardized and informal measures of comprehension and word recognition accuracy. Moreover, recent analyses of students identified with significant reading difficulties and referred for an in-depth diagnosis in reading reveal almost universal difficulties in reading rate or reading efficiency.

Reading rate, then, can and should be considered as a reasonable and effective method for assessment of reading progress and, more importantly, diagnosis of reading problems. If reading rate is to be used for this purpose, however, I argue that certain tasks need to be carried out. These include the identification of valid standards for reading rate as well as the conditions under which reading rate should be measured.

Finally, I conclude that although reading rate can be a valuable and effective tool in the diagnostic and assessment process, it is not the only tool available, nor should it be the only assessment and diagnostic tool that a teacher or diagnostician use. Moreover, the identification of difficulties in reading rate does not suggest simple-minded exercises or other interventions for building reading rate. Theoretically, rate is a measure of the underlying concept of reading fluency. Authentic interventions such as the use of repeated readings prior to the performance of poetry or reader's theatre have been shown to lead to improved fluency, improved rate of reading, and improved overall performance in reading.

For years reading rate has occupied a secondary role, at best, in most practitioners' concept of reading and reading assessment and diagnosis. Conventional wisdom has suggested that the rate at which a reader processes text matters little as long as the reader read with accuracy and, more importantly, with comprehension. For example, just this past semester I had graduate students in my "Diagnosis of Reading Problems" course examine reading data profiles of a variety of students. Those readers with poor reading rates and acceptable comprehension were viewed by most graduate students, who were themselves practicing teachers, as normal readers who required little in the way of extra attention or intervention. When the poor reading rate was accompanied by inadequate comprehension, most students saw a problem. However, the answer to the problem was to help such readers develop comprehension strategies and skills to make sense of the text. Few students saw a connection between slow and inefficient processing of the text and poor comprehension.

Despite this ambivalent orientation toward reading rate held by many practitioners, some recent studies have indicated that measure of reading rate are indeed associated with comprehension and general proficiency in reading. The work of Ronald Carver in the 1980s has helped make the theoretical and empirical connection between rate and comprehension. More recently, Gay Su Pinnell and her associates (1995), using data from the National Assessment of Educational Progress, found that reading rate, used as a measure of reading fluency, was substantively associated with the silent reading comprehension of fourth grade students. In the study, fluency was closely associated with comprehension, yet there was little difference in word recognition accuracy among the four identified levels of fluency and comprehension. Reading rate between the most and least fluent readers (as well as the students with the best and worst comprehension) differed by nearly a factor of three. The most fluent (and best comprehenders) read at a rate of 162 words per minute, while those who struggle most in fluency and comprehension read at 65 words per minute.

Moreover, a pragmatic analysis of reading rate in authentic classroom reading situations also hints at the importance of reading rate. Students reading at a rate that is nearly one-third the rate of their classmates would find it difficult to keep up with their classmates on reading assignments, especially those that required some measure of accountability after a predetermined

time for reading, a time period that would most likely not be adequate for those least fluent and least efficient of readers.

With this emerging recognition of the possible role of reading fluency in assessing and diagnosing possible reading difficulties, I decided to examine the current state of practical (school oriented) knowledge of reading rate, particularly on its usefulness as a diagnostic and assessment tool. More precisely, I asked the question, is there other evidence that reading rate is associated with more classroom oriented measures of reading achievement and comprehension? The answer is a definite yes.

In a study of third and fifth-grade students, Rasinski (1999) reported significant Pearson product-moment correlations of .67 and .57 between reading rate and word recognition accuracy for grades three and five respectively. Knowing that instructional reading level is partially defined by a 95% word recognition accuracy level on passage reading, Rasinski suggested that instructional reading rates could be determined by creating prediction equations per grade level which would yield targeted reading rates based upon levels of word recognition accuracy.

Rasinski (1990) also reported significant associations between oral reading rate and several measures of general reading proficiency and comprehension. For third grade students Rasinski found significant correlations of .37, .45, and .79 between reading rate and retelling, multiple choice comprehension, and the comprehension subtest of the Gates-MacGinitie Reading Test respectively. For fifth-graders, Rasinski reported significant correlations of .38, .53, and .75 between reading rate and measures of retelling, multiple-choice comprehension, and the comprehension subtest of the Gates-MacGinitie Reading Test.

Most recently, I had, this past December, the opportunity to take oral reading samples of two second grade classrooms that made up the entire grade two cohort of a local elementary school. I took one minute reading probes from each child on a second-grade level passage and a third-grade passage. From these probes I was able to measures of reading rate, in words read correctly per minute (WCPM), as well as percentage of word recognition accuracy. I also had students read word lists at second and third-grade levels, a word list of high frequency words appropriate to the primary grades, and Cunningham and Cunningham's Names Test, a test of

decoding words in isolation in which the words represent a wide range of phonics elements students are expected to master in the elementary grades. I also asked the two highly experienced teachers (one of whom had her doctorate in reading education) to rate each student's overall level of reading proficiency based on her observations of each child's reading in authentic classroom reading situations over the first four months of school. All measures of reading correlated positively with the teachers' estimation of student proficiency (see Table 1). However, the measures of reading rate appear to be among the most powerful and significant predictors of student achievement as measured by teacher estimation. The correlations between reading rate and teacher estimation was .79 and .82 for the second and third grade passages respectively. On the grade two passage, the mean reading rate was 88 WCPM, with a standard deviation of 30.

To summarize at this point, then, regardless of the of measure of student overall proficiency used, reading rate, an easily obtained measure of reading fluency, appears to correlate significantly with every measure. Thus, used in a classroom or clinical setting, measures of reading rate may provide teachers with another tool for identifying those children who may be experiencing difficulties in learning to read.

Inert Tables 1 and 2 Here

Next, taking this approach to the a clinical setting, I examined the record of every student in the past two years who was referred to our university reading clinic for reading problems and for whom measures of reading rate (WCPM) at or one level below grade placement were available. Because not all children were able or asked to read such passages, not all students referred to our clinic were included in this examination. Every one of the students in this examination read at a rate that is below the 50%ile reading rate for their assigned grade level as identified by Hasbrouck and Tindal (1992) (see Table 2). On average, the 13 students for whom such a comparison with grade level reading rates on grade level passages was possible read at a rate that was 48.9% of the 50th %ile reading rate for their grade level. In addition three second graders were not asked to read a second-grade passage. However, their reading rate on a passage

below their grade placement was less than half the 50th %ile target rate for their grade level. Half of the 16 students we provided diagnostic services to in grades two through four were reading at a rate that was significantly less than half of what could be considered the normal rate for students at their grade level. Think of the frustration these children must experience as any reading assignment given them at their grade level requires more than twice the amount of time to accomplish as the more normal achieving student. At a very pragmatic level, then, examining reading rate can provide reading diagnosticians with a picture of the reading challenge faced by struggling readers everyday in their classrooms. At our university reading clinic we now routinely measure readers' rate of reading and include that data as part of the diagnostic process.

The connection between reading rate or efficiency and comprehension and general reading proficiency, however, also has a theoretical basis -- one being LaBerge and Samuels' (1974) theory of automaticity in reading. According to LaBerge and Samuels, readers have a limited amount of cognitive attention or capacity available to them. That cognitive capacity can be directed to the surface level task of decoding or to the deeper level task of comprehension. Attention that is devoted to word recognition cannot be applied to comprehension. Thus, it is in the readers' best interest to devote maximum cognitive capacity to comprehension and minimal cognitive attention to word recognition. As readers develop their word recognition to a point of automaticity, their sight vocabulary increases, their sensitivity to textual phrasing increases, and these are both reflected in improvements in reading rate. As reading rate improves within acceptable boundaries, more cognitive capacity is then freed for comprehension processing, and comprehension should improve. Thus, examinations of reading rate should provide reading specialists, diagnosticians, and teachers with one more tool for determining the extent to which readers have developed mastery and automaticity over the surface level aspects of reading in order to devote their maximum efforts to making sense of what they have read.

If we accept the premise the reading rate does present reading specialists, diagnosticians, classroom teachers, and others with one more valid tool for assessing reading performance, certain questions, it seems, need to be addressed. The first is this: do we have reliable standard

measures of reading rate that can be used to compare students' performance?

Carver (1989) did make estimates of silent reading rates based on data reported in another study. He also acknowledged, however, that there exists a wide variety of rate norms in the scholarly literature on reading rate. For example, Gilmore and Gilmore (1968) reported that the average fifth-grade reading rate ranges from 108 to 140 words per minute. Durrell (1955) pegged the average fifth-grade oral reading rate at 150 words per minute. Stroud and Henderson (1943) determined that the average fifth-grade reading rate was 181-185 words per minute. For fifth grade students, depending on the study consulted, a reading rate between 108 to 185 words per minute could be considered normal and appropriate. Such a wide spread and inconsistency between reports make such data near useless.

In his latest (Allington, 2001) book on What Really Matters for Struggling Readers, Dick Allington notes that reading rate plays an important role in students' general reading development. Using data found in Harris and Sipay's (1990) classic text on reading difficulties and developed from earlier research, Allington provides a set of what he terms "adequate" reading rate ranges by grade level (see Table 3). These target rates range from 60-90 words per minutes for first grade students to 215-245 words per minute for seventh grade students, to 250-300 words per minute for twelfth-graders. Allington does caution his readers that reading rate data needs to be approached with caution, especially when inferring differences between oral and silent reading. The standards provided by Harris and Sipay (1990) and through Allington (2001) do not identify if the data was collected in silent or oral reading. Thus, in addition to concerns over the lack of agreed upon standards for reading rate, another concern is the lack of specificity to the conditions under which the standard rates apply.

Insert Table 3 About Here

To determine just how valid these "adequate" rate standards might be, I determined the oral reading rates of nearly 100 adult college graduate students on a variety of twelfth-grade narrative and expository texts. The material was read orally for one minute. An examiner listened to the reading and marked any errors made during the reading. Rate was calculated as

the number of words read correctly per minute. In my corpus of readers, the average rate was 166.4 words read correctly per minute. Word recognition accuracy was 99.34%, clearly at an independent level as measured by informal reading inventory standards. This mean rate, 166 words per minute, however, is severely inconsistent with the data reported by Harris and Sipay and Allington. Indeed, using the Harris and Sipay/Allington rates for twelfth graders as targets, 100% of these college graduates read below the minimally adequate reading rate and could logically be considered deficient or inefficient readers that by that criteria.

I attempted to take into account Allington's caution that older readers tend to read faster in a silent mode than orally. I collected several silent readings from some of the same adults who read for me orally and found that, on average, oral reading rate was approximately 76% of silent reading rate for adult proficient readers on twelfth-grade level materials. Applying this information to the oral rate data, the mean silent reading rate for adults should be 214 words per minute. Even with this adjustment, the average reading rate of the adult readers is still significantly below the Harris and Sipay/Allington minimally adequate reading rates for grades 12, 9 and 8. It is even slightly below the minimally acceptable 215 words per minute rate that would be expected for seventh grade students.

Concurring with Carver (1989), despite the potential value of reading rate for diagnostic and assessment purposes, we currently do not have a good handle on just what are the appropriate reading rates one could expect for readers at various grade levels, not to mention various times within grade levels. If reading rate is to be a useful tool for identifying and assisting students with reading difficulties, we absolutely need some clear and valid rate standards by grade level and time during the academic year.

Hasbrouck and Tindal (1992) have provided us with some preliminary data on reading rates based on a large sample of children (see Table 4). However, these rates apply to only four grade levels and, because the data was collected in a variety of sites and conditions, we cannot be certain of the uniformity of conditions under which the data were collected.

Insert Table 4 About Here

The second major question that needs to be faced if we hope to use reading rate information to diagnose and help readers with reading difficulties is to develop some conventions or guidelines for collecting this data. For example, here are just some of the very pragmatic questions that should be addressed in establishing rate norms and in collecting rate data from struggling readers:

- In collecting rate data should the reader read orally or silently?
- Should the reader be permitted to rehearse the text prior to the rate collection?
- Should there be a measure of reading comprehension attached to the rate collection?
- How long should the reader be asked to read -- for the entire passage or for a predetermined time period?
- How should rate be calculated --- total number of words covered during a reading episode or words read correctly during the reading episode?
- Should words skipped or omitted be counted in the calculation of rate? What about words inserted?
- How should words be counted? Should there be a standard unit of measurement for a word (e.g number of letters make a standard word?)
- How should readers be prompted to read --- "in your normal voice" or "as fast as you can?"
- What type of text should be used for determining rate?
- How should the difficulty of the text be determined?
- How often should reading rate be determined?
- If rate standards are standards for various times within the year, what should those time periods be?
- What should be the cutoff rates, the rates at which readers are considered to be processing the text in a competent, efficient, and meaningful manner or, conversely, rates associated with an inefficient processing or in a manner that serious disrupts the reader's construction of meaning and at which intervention should occur?
- What is the relationship between silent and oral reading rates at various grade levels?

Clearly, there are other questions that may be added to this list. And, although they may seem rather trivial, they should be addressed. We have lived too long ignoring data that could provide valuable clues to the reading of students who are at risk in reading. We are beginning to recognize that an efficient processing of text is necessary for proficient and meaningful reading. But we can only use the information if we have clear and adequate standards and procedures for collecting and interpreting that data. I truly feel that it would be a worthwhile project to firmly establish those norms and procedures so that reading scholars and practitioners alike can use and understand data that is just to valuable to ignore.

Finally, I wish to conclude by noting that although reading rate can be a valuable and effective tool in the diagnostic and assessment process, it is not the only tool available, nor should it be the only assessment and diagnostic tool that a teacher or diagnostician use. Moreover, the identification of difficulties in reading rate does not suggest nor should it lead to simple-minded exercises or other interventions for building reading rate. Theoretically, rate is a measure of the underlying concept of reading fluency. Authentic interventions such as modeling fluent reading, providing support while reading, and the use of repeated readings prior to the performance of poetry or reader's theatre have been shown to lead to improved fluency, improved rate of reading, and improved overall performance in reading. Although fluency can be assessed using reading rate as one measure, reading fluency can and should be taught in authentic and engaging ways for students. As fluency improves, reading rate and comprehension will improve as well.

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Table 1

Correlations Between Teacher Estimation of Overall Second-Grade Student Reading and Other Measures of Reading Performance

Type of Reading Measure	Correlation with Teacher Estimation of Overall Student Reading Performance*
Second Grade Word List (20 words)	.78
Third Grade Word List (20) (20 words)	.77
High Frequency Word List (15 words)	.70
WCPM Grade 2 Passage	.79
WCPM Grade 3 Passage	.82
Word Recognition Percentage on Grade 2 Passage	.49
Word Recognition Percentage on Grade 3 Passage	.52
Names Test (72 words)	.76**

* Teacher estimation made in December; based on four months of daily observation, instruction, and other collected data.

** All correlations significant at the .001 level

n = 36

Table 2

Students Referred to the KSU Reading Clinic for Diagnostic Testing*

Student Assigned Gr	Rate on Passage at Gr Placement(WCPM)		Target Rate**	Rate on Passage One Gr Level Below Placement (WCPM)	
2 (Nov)			53		14
2 (Nov)			53		36
2 (Feb)		78		31	
2 (Feb)	29	78		38	
2 (Jan)	33		78		28
2 (March)	51		78		51
2 (April)	36		94		49
3 (Oct)	72	79		73	
3 (Feb)	63	93		95	
3 (March)	48		93		56
3 (March)	46		93		55

Table 2 (continued)

Students Referred to the KSU Reading Clinic for Diagnostic Testing*

Student Assigned Gr	Rate on Passage at Gr Placement(WCPM)	Target Rate**	Rate on Passage One Gr Level Below Placement (WCPM)
4 (October)	58	99	47
4 (Nov)	71	99	81
4 (March)	71	112	74
4 (March)	64	112	117
4 (March)	24	112	33
5 (October)		105	102
5 (October)		105	58 (gr 3 text)
6 (October)		Not Avail	81
6 (March)	120	Not Avail	128
6 (March)	83	Not Avail	75
9 (March)	70	Not Avail	77

*All students referred to the clinic for significant reading difficulties perceived by the teacher and/or parent. All students were determined to have an instructional reading level at least one grade level below their actual grade placement as a result of the diagnostic process.

** Target rate is the 50 %ile rate identified by Hasbrouck & Tindal (1992)

Table 3

Adequate Reading Rates*

Grade Level	Rate in WPM
1	60-90
2	85-120
3	115-140
4	140-170
5	170-195
6	195-220
7	215-245
8	235-270
9	250-270
12	250-300

* Rates originally reported by Harris and Sipay (1990) and reported most recently in Allington (2001)

Table 4

Curriculum-Based Oral Reading Rate Norms*

Grade	Fall	Winter	Spring
2	53	78	94
3	79	93	114
4	99	112	118
5	105	118	128

*Fiftieth percentile rank rates norms are reported. Data originally reported in Hasbrouck & Tindal (1992). More complete data can be found in the original article.

Rate data is reported in Words Correct Per Minute (WCPM)